

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

1998 Biennial Regulatory Review
Spectrum Aggregation Limits for Wireless
Telecommunications Carriers

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WT Docket No. 98-205

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COMMENTS OF AT&T WIRELESS SERVICES, INC.

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COMMENTS OF AT&T WIRELESS SERVICES, INC.

AT&T Wireless Services, Inc. ("AT&T") hereby submits its comments in response to the Commission's Notice of Proposed Rulemaking in the above-captioned proceeding.^{1/}

INTRODUCTION AND SUMMARY

The Commission's spectrum cap on commercial mobile radio services ("CMRS") and the accompanying attribution rules were originally designed to protect nascent competition in wireless markets.^{2/} With competition in the provision of wireless services now a reality,^{3/} the

^{1/} 1998 Biennial Regulatory Review, Spectrum Aggregation Limits for Wireless Telecommunications Carriers, Notice of Proposed Rulemaking, WT Docket No. 98-205, FCC 98-308 (rel. Dec. 10, 1998) ("Biennial Review NRPM").

^{2/} Originally adopted in 1994 as a "restriction on the amount of PCS spectrum a cellular licensee or other entity could obtain," the cap reflects concerns for a bygone day. See Implementation of Sections 3(n) and 332 of the Communications Act, 9 FCC Rcd 7988, 8100-8117 (1994) ("CMRS Third Report and Order").

^{3/} Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Third Report, FCC 98-81, at 2 (rel. June 11, 1998) ("Third Annual Report")

wireless marketplace has outgrown the need for rigid, structural regulation. Most consumers now have a choice of at least four facilities-based CMRS providers, and wireless services have earned widespread consumer acceptance.^{4/}

Consistent with its commitment to “trust[] in the operation of market forces,”^{5/} the Commission should eliminate the CMRS spectrum cap.^{6/} As set forth in these comments, and in

(recognizing that “substantial progress has been made towards a truly competitive mobile telephone marketplace”).

^{4/} Id. at 3. AT&T’s “Digital One Rate” plan has spawned a revolution in consumer perceptions of and demand for wireless services. ABC News recently reported that “[t]he drive for a national mobile network has been spurred by AT&T’s Digital One Rate plan.” John Borland, Bells Lagging on Wireless: Lack of National Coverage Hurts Regional Companies, ABC NEWS.com, January 22, 1999, http://abcnews.go.com/sections/tech/CNET/cnet_bellwireless990120.html. Bell Atlantic, “responding to rival AT&T Corp.’s popular flat-rate pricing plan for cellular-phone service,” recently introduced a flat-rate program similar to AT&T’s Digital One Rate. Stephanie N. Mehta, Bell Atlantic Is Expected to Introduce Single-Rate Program for Wireless Users, Wall Street Journal, September 9, 1998, at B8. Moreover, the Commission continues to search for new ways to “facilitate competition in CMRS markets” and to “bring[] competition to local telecommunications markets generally, consistent with the central Congressional mandate of the 1996 Act.” Biennial Review NRPM at ¶ 5. Eliminating the spectrum cap and attribution rules will help to realize these ambitious goals. Id.

^{5/} Biennial Review NRPM at ¶ 5.

^{6/} The Commission recognizes that regulations are only called for “when there is an identifiable market failure.” Id. (emphasis supplied). See id. at Separate Statement of Commissioner Michael Powell (suggesting that the Commission has the burden to re-assess and re-validate the rules). Regulation serves the public interest only when it is “targeted” to correct an express market failure. Biennial Review NRPM at ¶ 5. Even then, rules should be “craft[ed] narrowly” so as to “impose only the minimum restraint on the market necessary to achieve the public interest.” Id. (emphasis supplied). See In the Matter of Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, 9 FCC Rcd 7988, 8100 ¶ 238 (1994) (noting that spectrum cap intended to serve as “minimally intrusive means” of ensuring that mobile communications markets remain competitive). Congress charged the Commission with “reviewing its regulations applicable to providers of telecommunications services on a biennial basis to ‘determine whether any such regulation is no longer necessary in the public interest as the result of meaningful economic competition between providers of such

the accompanying analysis of the spectrum cap by Economists Inc.,^{7/} continued enforcement of the cap is not necessary to prevent market concentration. To the contrary, the spectrum cap introduces substantial market inefficiencies that impede the growth and development of wireless services called for in the Communications Act.^{8/} Likewise, the attribution rules used to determine whether a person holds an interest in spectrum in excess of the cap deprives new entrants of access to capital and management expertise that could otherwise help them to compete effectively in the marketplace.

Rather than a rigid spectrum cap, AT&T respectfully suggests a policy of case-by-case review of acquisitions of CMRS licensees. The Commission should create a “safe-harbor” that permits the acquisition of up to 45 MHz of spectrum in any given market. For aggregations in excess of 45 MHz, the competitive effects of acquisitions and transfers of CMRS licensees can be evaluated with reference to the analytical tools developed by the antitrust agencies.^{9/} Such a

service.” *Id.* (citing 47 U.S.C. § 161(a)(2)). If the Commission finds that a regulation is no longer in the public interest, it has “an affirmative obligation to repeal or modify that regulation.” 47 U.S.C. § 161(b).

^{7/} Bruce M. Owen and Mark W. Frankena, “An Economic Evaluation of the Federal Communications Commission’s Commercial Mobile Radio Services Spectrum Cap,” attached hereto at Exh. 1 (“Economists Inc.”).

^{8/} 47 U.S.C. § 151 (purpose of the Act is to encourage the “rapid, efficient, Nation-wide” availability of radio communications service).

^{9/} In reviewing license transfers under the “public interest” standard of sections 214(a) and 310(d) of the Communications Act, 47 U.S.C. §§ 214(a), 310(d) the Commission has adopted a test that encompasses implementation of the pro-competitive, de-regulatory objectives embodied in the Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat 56, codified at scattered sections of 47 USC (“1996 Act”). See Applications of NYNEX Corp. and Bell Atlantic Corp., 12 FCC Rcd 19985, 19987 ¶ 2 (1997) (“Bell Atlantic/NYNEX”) (referencing Department of

policy would promote the expansion of wireless services in a competitive marketplace without sacrificing an appropriate measure of certainty or administrative efficiency.^{10/}

I. THE SPECTRUM CAP IS NOT NECESSARY TO PROMOTE COMPETITION

The spectrum cap was adopted to ensure that wireline monopolists would not stifle competition in wireless markets. Today the rule is not only unnecessary, but also counter-productive. By preventing carriers from obtaining sufficient spectrum to realize economies of scale and scope, for example, the spectrum cap may actually raise the costs of offering wireless services and prevent carriers from effectively meeting consumer demand.

A. The Spectrum Cap Imposes Costs On The Market

The spectrum cap has one clear consequence: it prevents the accumulation, under certain conditions,^{11/} of wireless spectrum in excess of 45 MHz by any individual competitor.^{12/} But there is nothing inherently beneficial to this outcome. As a general matter, consumers are not made worse off whenever one firm is larger or more efficient than its competitors.^{13/} The

Justice and Federal Trade Commission 1992 Horizontal Merger Guidelines, reprinted at 4 Trade Reg. Rep. (CCH) ¶ 13,104 (1992) ("1992 Merger Guidelines").

^{10/} AT&T seeks repeal of the spectrum cap rule pursuant to the Commission's biennial review process, for the reasons set forth herein, rather than forbearance from enforcement of the rule under section 10 of the Communications Act.

^{11/} The Commission prohibits CMRS licensees from acquiring an attributable interest in a total of more than 45 MHz of licensed broadband PCS, cellular, and SMR spectrum regulated as CMRS with significant overlap in any geographic area. 47 C.F.R. § 20.6(a).

^{12/} CMRS Third Report and Order at 8100 ¶ 239.

^{13/} See Economists Inc. at 13.

Commission itself has recognized that the acquisition of spectrum may allow efficiencies that would otherwise not be available.^{14/} In other contexts, in fact, the Commission has endorsed spectrum aggregation in order to enhance offerings to downstream consumers.^{15/} By limiting the amount of CMRS spectrum that a single competitor may acquire, the cap automatically prevents consumers from benefiting from potential economies of scale and scope that may arise when firms have access to increased spectrum.^{16/}

The Commission cannot show there is “some point” at which spectrum aggregation by itself reduces competition and harms the public interest.^{17/} The spectrum cap instead interferes with the ability of firms in the market to efficiently allocate resources. There are two ways in

^{14/} In the Matter of Amendment of Parts 20 and 24 of the Commission’s Rules, Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap, 11 FCC Rcd 7824, 7869 ¶ 95 (1996) (“CMRS Spectrum Cap Report and Order”).

^{15/} See, e.g., In re Amendment of Parts 21, 43, 74, 78 and 94 of the Commission’s Rules Governing the Use of Frequencies Affecting Multichannel Multipoint Distribution Service, 5 FCC Rcd 6410, 6411 ¶ 9 (1990) (MDS channels will provide “a more significant benefit to the public if used collectively . . . than if used individually by multiple operators . . .”); In the Matter of Amendment of Parts 22 and 24 of the Commission’s Rules, Broadband PCS Competitive Bidding and Commercial Mobile Radio Service Spectrum Cap, 11 FCC Rcd 7824, 7875 ¶ 105 (elimination of cross-ownership rules will foster “enhanced opportunities to compete.”) (1996); In the Matter of Revision of the Rules and Policies for the Direct Broadcast Satellite Service, 11 FCC Rcd 9712, 9724 ¶ 31, 9733 ¶ 55 (1996) (rejecting permanent ban on firms holding spectrum at two full-CONUS locations).

^{16/} Economies of scale arise out of the declining marginal cost of expanded output. Economies of scope arise from the efficiencies of producing (or consuming) services in a bundle rather than separately. See Economists Inc. at 13-15. Competitors cannot achieve these efficiencies, they could actually have a reduced incentive to expand output. See infra.

^{17/} CMRS Spectrum Cap Report and Order at 7869 ¶ 95.

which this occurs, to the detriment of consumers. First, the rule prohibits potentially beneficial transactions that are not likely to create or enhance market power.^{18/} Second, transactions in which the pro-competitive effects on balance outweigh any anti-competitive harm may also be denied.^{19/}

While the 45 MHz spectrum cap was intended to serve as a “simplified version” of the Herfindahl-Hirschmann Index (“HHI”),^{20/} the spectrum cap actually prevents transactions that would not raise concerns even under traditional HHI analysis under the 1992 Merger Guidelines.^{21/} There is, in fact, virtually no relationship between the spectrum cap and the 1992 Merger Guidelines or traditional enforcement of competition policy. As demonstrated in the attached analysis by Economists Inc., a firm that is limited to 45 MHz may be prevented from attaining economies of scale and scope that would be available to it if it had access to additional spectrum.^{22/} Such economies were in fact the reason the Commission limited the number of

^{18/} See Economists Inc. at 1, 3, 7-11.

^{19/} See Economists Inc. at 11-21.

^{20/} CMRS Spectrum Cap Report and Order at 7870 ¶ 96.

^{21/} See Economists Inc. at 9-10.

^{22/} See id.

cellular licenses available in markets initially.^{23/} Failure to exploit such economies could in fact foreclose competition and lead to higher costs.^{24/}

Economists Inc. also convincingly demonstrates that the spectrum cap has other pernicious effects as well. The cap causes inefficient use of substitutes for cellular, broadband PCS, and SMR spectrum, distorting a firm's use of inputs and increasing production costs.^{25/} An efficient firm that may otherwise be able to use additional spectrum in low-density areas of the country is prevented from doing so under the spectrum cap.^{26/} Incentives to reduce prices, increase quality, and innovate are also reduced because firms are less likely to be able to make additional sales in markets where they are at or near the spectrum cap already.^{27/} For a firm that is already using 45 MHz of spectrum in a number of geographic markets, it makes particularly little sense to invest in innovations that are intended to supplement regional or national service offerings if it would require more than 45 Mhz in those areas.^{28/} If additional spectrum is

^{23/} CMRS Third Report and Order at 8109-10 ¶ 263 (finding that the spectrum cap will enable wireless carriers with 40 MHz of spectrum "to obtain additional spectrum so they have incentives . . . to take advantage of . . . economies of scale and scope").

^{24/} See Economists Inc. at 15.

^{25/} See Economists Inc. at 15-17.

^{26/} See Economists Inc. at 17-18.

^{27/} See Economists Inc. at 19-20.

^{28/} See id.

required to implement the enhanced services, they will be unavailable in markets where that firm is already at or near the spectrum cap.

B. Wireless Markets Are Not Prone To Anti-Competitive Effects Appropriately Targeted By Structural Regulation

Mergers and other transactions involving the acquisition of more than 45 MHz of spectrum do not always result in levels of market concentration that raise initial concerns under traditional standards of competition policy.^{29/} Indeed, there is no evidence that the accumulation of any particular “amount” of spectrum causes harm to competition.^{30/} For that reason, spectrum caps are an undesirable alternative to case-by-case analysis.

In fact, there is compelling evidence that wireless markets are not particularly susceptible to the exercise of market power -- either through anti-competitive collusion or through the pernicious unilateral conduct.^{31/} These markets contain numerous well-capitalized actual and potential competitors, which have observed that consumer demand for wireless telecommunications services is rising every year.^{32/} Importantly, wireless “spectrum” is not a

^{29/} See Economists Inc. at Tables 1 and 2.

^{30/} The fact that wireless spectrum is a “basic resource . . . needed and used by all wireless service providers . . .” does not by itself justify the caps. See Third Report and Order at 8100 ¶ 239. The Commission has the burden of demonstrating that limits on this input benefit consumers in the output market.

^{31/} Compare CMRS Third Report and Order at 8101 ¶ 240 (predicting that aggregation of spectrum would confer market power). Importantly, the Commission’s predictive concerns were specifically directed towards the local, incumbent wireline monopolists. See id.

^{32/} The Commission itself recognized the proliferation of competitors in wireless markets, noting that there are at least three mobile telephone providers in each of the 50 largest Basic Trading Areas (“BTAs”), and in 97 of the 100 largest BTAs. Third Annual Report at 3.

relevant market from the consumer's perspective. At most, spectrum is an "input market" into cellular and other wireless telecommunications services. From a consumer perspective, the only valid reason for rationing spectrum is that it might expand the availability of products and services in the output market. However, nowhere has it been demonstrated that limiting the availability of this "input" creates additional supply in the "output" market.

Moreover, it would be relatively easy for existing competitors to add capacity in response to any price increase. Under these conditions, firms cannot profitably reduce output (fix prices, allocate markets, or engage in any other form of traditionally condemned activity) independently or in concert. For these reasons, no wireless provider could sustain a price increase for any significant period of time.^{33/}

For these reasons, the Commission cannot reasonably rely on the predictive value of its market concentration models³⁴ to justify the imposition of "per se" rules barring the aggregation of more than 45 MHz of spectrum in a given geographic market. Such a rule ignores the rapidly evolving nature of the market, the ability of firms to enter or expand output relatively easily in

^{33/} Two important characteristics of the market underscore this conclusion. First, the vast majority of costs involved in providing service are fixed costs (cell sites, towers, etc.) Variable costs in the output market are close to zero. Thus, the cost of adding additional subscribers is nearly negligible. Competitors therefore have a direct economic incentive to maximize output. Second, technological innovation in this market can provide demonstrable cost and quality advantages, giving competitors a substantial incentive to invest in new technologies that can expand output. See generally Economists Inc.

^{34/} See CMRS Third Report and Order at Appendix A ("Hypothetical Herfindahl-Hirschmann Indices").

order to defeat an attempted price increase, and other pertinent factors.^{35/} To provide some certainty and to foster administrative efficiency, however, the Commission should retain a 45 MHz spectrum “safe harbor” below which a transaction will not trigger further review.

II. THE SPECTRUM CAP IN COMBINATION WITH THE ATTRIBUTION RULES DISTORTS EFFICIENT BUSINESS ARRANGEMENTS

The Commission’s attribution rule for CMRS providers was adopted for the purpose of determining whether an entity should be subject to the 45 MHz spectrum cap.^{36/} The attribution level was set at twenty percent because the Commission was concerned that such an interest, held by a single entity, could create the possibility of de facto control.^{37/} However, experience demonstrates that the costs of the rule have outweighed its putative benefits. In the event that the Commission does not repeal the spectrum cap, AT&T respectfully requests that the “twenty percent” rule be repealed and that investments up to de facto control be permitted without attribution.

Conservative attribution rules, setting a ceiling lower than de facto control, create a disincentive to invest in new wireless services. The fast-growing wireless industry depends on the availability of investment capital.^{38/} New investment ensures that market participants can

^{35/} In fact national wireless service plans such as AT&T’s “Digital One Rate” may have an impact on prices in disparate geographic markets around the country.

^{36/} CMRS Spectrum Cap Report and Order at 7880 ¶ 117. See 47 C.F.R. § 20.6(d).

^{37/} Id. at ¶ 118. Officers and directors convey an attributable interest as well. 47 C.F.R. § 20.6(d)(7). There is no basis, however, for attributing control to officers and directors in the absence of actual control over the licensee.

^{38/} Implementation of Sections 3(n) and 332 of the Communications Act, Second Report and Order, 9 FCC Rcd 1411, 1421 ¶ 22 (1994) (finding that “[t]he continued success of the mobile

innovate and provide consumers with the best products and services possible. Rules that make management agreements attributable deprive new entrants of management expertise. Such regulations do not serve the public interest. The affiliation rules are a clear example, since they prevent the formation of otherwise efficient combinations of investors as the market may demand.³⁹

The current rules limit investment for two reasons. First, they set an arbitrary ceiling on outside investment in a wireless licensee that may not rise to the level of “control” but is nonetheless deemed attributable and therefore precluded. Second, the interplay between ownership limits and restrictions on management interests imposes substantial transactions costs on licensees who are interested in providing capital and management expertise to new entrants on a non-controlling basis.

AT&T has direct experience with these untoward effects. In a series of recent transactions designed to facilitate the rapid buildout of its wireless PCS network in a number of underpopulated markets nationwide, AT&T joined with other investors to help three companies become AT&T affiliates.⁴⁰ None of the minority investors in these companies can exercise de

telecommunications industry is significantly linked to the ongoing flow of investment capital into the industry”).

³⁹/ Biennial Review NRPM at ¶ 60 (noting that the rule “may limit the availability of capital investment.”).

⁴⁰/ Specifically, AT&T has invested in Triton PCS, Inc., Telecorp PCS Inc., and Tritel PCS, Inc.

facto control over the ventures,⁴¹ but each investor's interest is attributable under the rules nonetheless. Thus, the ventures are prevented by operation of the Commission's rules from acquiring new spectrum or entering new markets -- even if it would be efficient to do so -- despite the fact that no minority investor could otherwise prevent it. The rules thus impose artificial barriers on competition and make it more difficult and costly to attract investment capital.

In this manner, the rules chill the timely roll-out of wireless services to unserved and underserved consumers. Such an outcome hardly serves the public interest. Reduced investment limits technological innovation as well. While innovation is important in many industries, it is critical in the high-technology wireless telecommunications business. Technology is the driving force behind today's highly competitive wireless marketplace. Investments in new technology benefit consumers by providing them with lower prices, new features, advanced capabilities, and more reliable service. Congress, the Commission, industry, and consumers agree that competition in the wireless marketplace serves as the catalyst for lower prices, increased choices, and technological innovation. The rule inadvertently discourages the technological improvements that drive consumer satisfaction. Partial ownership or an interest in management, contrary to the Commission's fears, neither reduces competition nor effectuates de facto control. Accordingly, the Commission should eliminate its burdensome rule and rely upon a case-by-case control test instead.^{42/}

^{41/} AT&T holds 20% of the equity in each of these firms, and has one vote on the management committee. Other investors have similar arrangements.

^{42/} "De jure" control may be evidenced by ownership of 50.1 percent or more of an entity's voting interest. See In the matter of Rulemaking to Amend Parts 1, 2, 21, and 25 of the

III. THE COMMISSION SHOULD UNDERTAKE CASE-BY-CASE REVIEWS OF WIRELESS MERGERS AND ACQUISITIONS, WITH A SAFE HARBOR

Whatever the benefits of the spectrum cap during the initial licensing of CMRS, continued enforcement of the cap in today's competitive environment is unnecessary and actually disserves the public interest. The public interest in promoting competition and economically efficient use of spectrum would instead be better served by case-by-case evaluation of the competitive effects of proposed spectrum license transfers, using the analytical tools developed by the antitrust agencies.^{43/}

For the reasons set out above, repeal of the spectrum cap would enable carriers and consumers to realize the benefits of scale and scope economies that are not possible today without creating a risk of anticompetitive conduct. As Economists Inc. has demonstrated, there is very little potential for such conduct in the current and foreseeable marketplace. To provide some measure of certainty and to foster administrative efficiency, however, repeal of the cap should be accompanied by the adoption of a safe harbor that permits aggregations of 45 MHz or less. Such a presumption would ensure that these aggregations would not be subject to greater

Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, 12 FCC Rcd 12545, 12691-92 (1997). "De facto control" can be determined on a case-by-case basis after considering all of the specific circumstances. See id. at 12691-2. See also Intermountain Microwave, 24 Rad. Reg. (P&F) 983 (1963); In the Matter of Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, PP Docket No. 93-253, Fifth Memorandum Opinion and Order, 10 FCC Rcd 403, 447 (1994); In re Application of Stereo Broadcasters, 55 FCC 2d 819, 821-22 (1975).

^{43/} See Economists Inc. at 21-26.

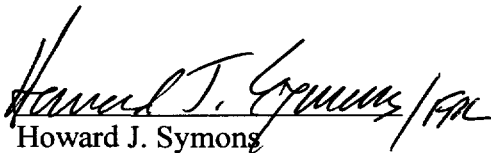
scrutiny that they are under current rules.^{44/} This policy would introduce the flexibility necessary for wireless carriers to be able to compete effectively to give them the incentives necessary to foster new investment in wireless services and facilities.

CONCLUSION

For the foregoing reasons, the Commission should eliminate the spectrum cap and attribution rules as set forth above.

Respectfully Submitted,

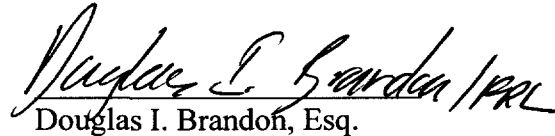
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^{44/} Amendment of Parts 30 and 24 of the Commission's Rules, 11 FCC Rcd 7824, 7869 ¶ 95 (1996) (spectrum cap adopted to "discourage anti-competitive behavior . . ." and "promote competition . . ."). Aggregations above 45 MHz would be subject to review under HHI thresholds or similar mechanisms, which themselves are presumptions that would be explored through more detailed review of particular transactions.



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An Economic Evaluation of the Federal Communication Commission's Commercial Mobile Radio Services Spectrum Cap

I. Executive Summary

This paper assesses the economic merits of the Federal Communication Commission's (Commission) spectrum cap as a means of preventing entities from acquiring market power that would give them the ability and incentive to raise prices and reduce quality for wireless telecommunications services. The Commission's expressed concern is that the acquisition of an attributable interest in more than 45 megahertz (MHz) of the approximately 189 MHz of spectrum that is subject to the cap would give an entity the ability and incentive to raise prices for wireless services above competitive levels both by reducing its output of wireless services below competitive levels and by withholding spectrum from incumbent competitors and new entrants that would use additional spectrum to expand output in response to an anticompetitive price increase.

This paper has three principal findings. First, the spectrum cap prevents many types of spectrum license transfers that would be unlikely to have an adverse effect on competition in markets in which shares are based on MHz of spectrum. Second, a spectrum cap distorts resource allocation and harms consumers by reducing achievement of economies of scale and scope, expansion of efficient firms, innovation and competition. Third, the Commission can attain its important goal of protecting consumers from market power without the distortionary effects of a cap by relying on case-by-case evaluation of license transfers using the tested competition policy principles and tools that apply to virtually all industries. These principles and tools are set out in the U.S. Department of Justice and Federal Trade Commission Merger Guidelines.

ECONOMISTS INCORPORATED

Based on these findings, this paper concludes that the Commission's spectrum cap is unnecessary and should be repealed.

The Commission has argued that the cap is useful because it reduces uncertainty: "A cap is a bright line test that provides entities who are making acquisitions with greater assurance than a case-by-case approach that if they fall under the cap, the Commission will approve the acquisition." (Third Report and Order, GN Docket No. 93-252, August 9, 1994, para. 250.) However, this point supports a safe harbor rather than a cap. The Commission could adopt a safe harbor policy that it would not challenge acquisitions that would give an entity an attributable interest in 45 MHz or less, while dealing with transactions that would give an entity more than 45 MHz on a case-by-case basis.

II. Description of the Spectrum Cap

Commercial Mobile Radio Service (CMRS) and other spectrum licenses are used by entities that supply mobile telephony, paging and messaging, dispatch, and mobile data services. Two Commission rules--the CMRS spectrum cap and the cellular cross-interest rule--limit the extent to which a single entity can have interests in multiple CMRS licenses in the same geographic area. This paper focuses on the spectrum cap.¹

The Commission's spectrum cap prevents a single entity from acquiring attributable interests in licenses for cellular telephone services, broadband Personal Communications Services (PCS), and Specialized Mobile Radio (SMR) services

¹ The Commission's cellular cross-interest rule prohibits any entity from having a direct or indirect ownership interest in licenses for both 25 MHz cellular channel blocks in overlapping cellular service areas, although an entity may have interests of 5 percent or less in licenses for both channel blocks.

that collectively exceed 45 MHz of spectrum in the same geographic area.² An entity is considered to have an attributable interest in a license in which it has an ownership interest of 20 percent or more³ or in which it has certain other types of interests.⁴ Two licenses are considered to be in the same geographic area if they cover 10 percent or more of the population of the same Major Trading Area (MTA) or Basic Trading Area (BTA).

Approximately 189 MHz of spectrum is subject to the cap. The spectrum that is subject to the cap includes 50 MHz of cellular spectrum, 120 MHz of broadband PCS spectrum, approximately 14 MHz of 800 MHz SMR spectrum,⁵ and 5 MHz of 900 MHz SMR spectrum.⁶ Given the 189 MHz total, the 45 MHz cap prohibits a single entity from having an attributable interest in 24 percent or more of the spectrum in an MTA or BTA that is subject to the cap.

III. The Spectrum Cap Prevents License Transfers that Are Unlikely to Reduce Competition

The spectrum cap prevents many types of spectrum license transfers that are unlikely to have an adverse effect on competition in markets for which shares

² The spectrum cap does not apply to SMR licenses that are regulated as "private" rather than "commercial" services. However, the Commission has proposed extension of the cap to include private SMR services. See Notice of Proposed Rulemaking, WT Docket No. 98-205, November 19, 1998, para. 28.

³ For a designated entity, the attribution threshold is 40 percent rather than 20 percent.

⁴ Other interests that are deemed attributable interests include management and joint marketing agreements that give an entity significant influence over price or non-price terms for services supplied using a license.

⁵ There is 21.5 MHz of 800 MHz SMR spectrum, consisting of 10 MHz of "upper" 800 MHz, 4 MHz of "lower" 800 MHz, and 7.5 MHz of "General Category" SMR spectrum. The discussion in this paper assumes that the 7.5 MHz of General Category SMR spectrum is regulated as "private" rather than "commercial" service and hence is not subject to the cap.

⁶ However, at most 10 MHz of SMR spectrum counts toward the 45 MHz limit for any one entity.

are based on MHz of spectrum. In order to explain this fact, this paper provides a brief review of the role of the Merger Guidelines and of the competition policy enforcement standards that apply to mergers and acquisitions.

A. Competition Policy Standards

The Merger Guidelines specify that one should begin an analysis of a merger or acquisition by delineating relevant markets and computing the effects of the acquisition on market shares and concentration. Concentration is measured by the Herfindahl-Hirschman Index (HHI), which is the sum of the squared shares of sellers in the market.

The Guidelines in effect specify a safe harbor for horizontal mergers or acquisitions that leave HHIs in relevant markets below 1,000. The Guidelines indicate that the antitrust agencies may investigate further acquisitions that would raise the HHI in a relevant market by over 100 to a post-acquisition level between 1,000 and 1,800, but in practice such acquisitions typically raise few concerns about market power and are seldom challenged.

The Guidelines further indicate that there is a rebuttable presumption that acquisitions that would raise the HHI by over 50 to a post-acquisition level above 1,800 will reduce competition. However, while the Guidelines designate a market with an HHI over 1,800 as "highly concentrated," the antitrust agencies do not seek to prevent all mergers and acquisitions that would increase HHIs to a level above 1,800. Enforcement decisions are not based on HHIs alone, and following further investigation it is unusual for the federal antitrust agencies to oppose or for courts to enjoin acquisitions that would increase HHIs by less than 200 or leave post-acquisition HHIs below 2,000.⁷

⁷ See M. B. Coate, "Economics, the Guidelines and the Evolution of Merger Policy," *Antitrust Bulletin*, Winter 1992, pp. 997-1024; M. B. Coate, "Merger Enforcement at the Reagan/Bush FTC," in M. B. Coate and A. N. Kleit, eds., *The Economics of the Antitrust Process*, Kluwer,

In addition to considering HHIs, competitive analyses of mergers and acquisitions may also take into consideration the market share of the merged firm in order to evaluate the potential for this firm alone to exercise market power as a dominant firm. However, post-acquisition market shares below 35 percent generally do not raise significant concerns beyond those raised by HHIs.

B. Relevant Markets for Analysis of the Spectrum Cap

Commission documents that address the spectrum cap generally are based on an implicit assumption that there is a relevant product market for spectrum that includes, at a minimum, a total of 180 MHz of spectrum. The candidate relevant product markets appear to include:

- Market with 180 MHz: 50 MHz of cellular spectrum, 120 MHz of broadband PCS spectrum, and the 10 MHz of contiguous “upper 800 MHz” SMR spectrum. This market is used by the Commission in the numerical analysis of the spectrum cap in Appendix A of Report and Order, WT Docket No. 96-59, June 21, 1996. One problem with the market with 180 MHz is that it excludes approximately 9 MHz of SMR spectrum that is subject to the cap. However, the SMR spectrum attributable to any one entity for purposes of applying the cap is limited to 10 MHz.
- Market with 189 MHz: The same spectrum that is in the market with 180 MHz plus the 4 MHz of “lower 800 MHz” SMR spectrum and the 5 MHz of 900 MHz SMR spectrum. This is essentially the spectrum that is subject to the cap. This 189 MHz figure is cited by the Commission, but not explicitly adopted as a market, in the discussion of the spectrum cap in the Third Report and Order, GN Docket No. 93-252, August 9, 1994, para. 258.

1996, Chapter 7; R. J. Gilbert, Testimony, Application of Wisconsin Electric Corp. et al., Public Service Commission of Wisconsin, Docket 6630-UM-100, 1996.

- Market with approximately 205 MHz: This would include spectrum identified by the Commission as available for terrestrial CMRS. It would include the spectrum in the market with 189 MHz plus "4.6 MHz of spectrum for non-cellular terrestrial Part 22 CMRS services, and 9.88 MHz of CMRS spectrum under Part 90." (Third Report and Order, August 9, 1994, para. 258 and n. 493.)
- Markets with 225 MHz or more: One could continue to expand the market to include not only the spectrum in the market with approximately 205 MHz but other spectrum used for one-way and two-way wireless telecommunications, for example, the 20 MHz for unlicensed PCS.⁸
- Broader markets: Market definition analysis eventually must also consider whether wireline services⁹ and/or non-geostationary satellite services (e.g., Iridium and other LEOs and MEOs) have become sufficiently competitive with CMRS services to be properly included in the market.

In evaluating wireless license transfers, the Commission's Wireless Telecommunications Bureau (WTB) has delineated product markets that include spectrum

⁸ In using the market with 180 MHz of spectrum, the Commission further notes that "there are several other communications services each of which has some, though by no means full, cross-elasticity with cellular, broadband PCS, and interconnected SMR services. These other services are paging, narrowband and unlicensed PCS, 220 MHz service, air-ground service, maritime service, satellite-based mobile services, General Mobile Radio Service, General Wireless Communications Service, interconnected private radio systems, CB radio and other 'low end' services, government radio systems, ... and wired local exchange service. Collectively these services exert some competitive pressure on cellular, broadband PCS and interconnected SMR that is not reflected in the HHIs calculated by the Commission's competitive analysis staff." (Report and Order, WT Docket No. 96-59, June 21, 1996, para. 100.)

⁹ The Commission has found that "A number of wireless technologies have begun to take aim at services long thought of as the sole province of wireline operators. For example, a number of operators are deploying networks using fixed wireless technologies to compete with wireline local exchange service. In addition, mobile telephone operators are beginning to go one step further by using aggressive pricing to position their services as true replacements for the wire-based services of LECs." (Third Annual CMRS Competition Report, May 14, 1998, p. 64.)

used for all CMRS, and alternatively spectrum used for all cellular, broadband and narrowband PCS, SMR, paging, and Business Radio (a form of interconnected private mobile radio) services.¹⁰

No attempt is made in this paper to determine which, if any, of these particular candidate markets is most appropriate for use in analyzing a license transfer application. In any case, the answer may vary, depending on the facts in the markets covered by the licenses being transferred. For simplicity, the numerical calculations in the following section of this paper assume that there is a relevant market that includes a total of 205 MHz of spectrum, consisting of 50 MHz of cellular (two 25 MHz blocks), 120 MHz of PCS (three 30 MHz and three 10 MHz blocks, which may be divided), 15 MHz of SMR spectrum (three 5 MHz blocks), and 20 MHz of other licenses (for the remaining 11.5 MHz of SMR, 3 MHz of narrowband PCS, etc.) that are held by a number of independent entities, no one of which has an attributable interest in a significant amount of the 205 MHz of spectrum in the market.

C. Comparison of the Spectrum Cap and the Merger Guidelines Thresholds

In explaining the rationale for the 45 MHz spectrum cap, the Commission has offered comparisons between the implications of the spectrum cap and the HHI thresholds in the Merger Guidelines. The Commission has stated that "The CMRS spectrum cap is a simplified version of the HHI." Also, the Commission has "found that a 45 MHz spectrum cap was necessary to prevent CMRS mar-

¹⁰ The WTB reserved judgment on whether spectrum used for unlicensed PCS was in the market. The WTB excluded spectrum used for maritime, air-ground, and satellite systems. One study has assumed a market with a total of 192 MHz of wireless spectrum, including 50 MHz for cellular, 120 MHz for broadband PCS, 13 MHz for interconnected SMR, 3 MHz for private radio, 2 MHz for federal government service, 2 MHz for maritime service, 1 MHz for CB radio, and 1 MHz for other. J. W. Berresford, "Mergers in Mobile Telecommunications

kets from becoming highly concentrated,” and, referring to an assumed market with 180 MHz of spectrum, the Commission has stated that “Having a 45 MHz CMRS spectrum cap...will result in a market that has an HHI below 1,900.” (Report and Order, WT Docket No. 96-59, June 21, 1996, para. 96, 100; Notice of Proposed Rulemaking, WT Docket No. 98-205, November 19, 1998, para. 16.)

Contrary to the Commission’s statement that the spectrum cap is a simplified version of the HHI, in fact the spectrum cap would prevent many license transfers that would not raise competitive concerns based on the HHI thresholds in the Merger Guidelines in a market with 180 MHz or more of spectrum. Moreover, the market share and HHI thresholds that are employed by the antitrust agencies are primarily screening tools that are used in the first instance to determine whether a proposed transaction warrants further scrutiny. Enforcement decisions by the antitrust agencies are not based on market shares and HHIs alone, much less solely on comparisons with threshold levels such as a market share of 35 percent or an HHI of 1,800.

1. Market Share Guidelines

In the illustrative market with 205 MHz of spectrum used in this paper, the 45 MHz spectrum cap limits a firm that has only cellular, broadband PCS, and up to 10 MHz of SMR spectrum to a market share of 22 percent. Even in the market with 180 MHz of spectrum, a firm’s market share would be limited to 25 percent.

A market share of 22 percent or 25 percent is far below the lowest shares that normally raise concerns about exercise of market power by a single entity. Many mergers and acquisitions that result in a firm having a market share

Services: A Primer on the Analysis of Their Competitive Effects,” Federal Communications Law Journal, 1996.

higher than 22-25 percent are allowed to proceed unchallenged by the antitrust agencies, even in markets with entry barriers.

2. HHI Guidelines

Concerns about simultaneous exercise of market power by more than one firm are triggered not by individual firm market shares but by the level of concentration in the market. The following two hypotheticals demonstrate that the 45 MHz cap would prevent many license transfers that would not raise concerns based on the HHI guidelines used by the federal antitrust agencies.

a. Hypothetical 1

Suppose that prior to a potential acquisition the 205 MHz of spectrum in the illustrative relevant market were divided among firms in the manner shown in Table 1. The largest firm in the market initially has 40 MHz (a market share of 19.5 percent), all of which is assumed to be subject to the cap. Firms B through H have from 30 MHz (14.6 percent) to 5 MHz (2.4 percent) each, while many small firms with insignificant individual shares have a total of 20 MHz (9.8 percent) between them. In this market, the HHI is 1,255.

Suppose now that Firm A proposes to acquire the licenses of one or both of Firms F and G, which have 15 MHz and 10 MHz of spectrum, respectively. The spectrum cap would prevent either acquisition. If Firm A acquired Firm G's 10 MHz license, Firm A's share in the relevant spectrum market would increase to 24.4 percent and the HHI would increase by 190 to a post-acquisition level of 1,446. If instead Firm A acquired Firm F's 15 MHz license, Firm A's share would increase to 26.8 percent and the HHI would increase by 286 to 1,541. If Firm A acquired Firm F's 15 MHz license and subsequently acquired Firm G's 10 MHz license, the latter acquisition would increase its share to 65 MHz (31.7 percent) and the HHI by 262 to 1,802. Even though these various transactions would increase Firm A's total licenses to 50 MHz, 55 MHz or 65 MHz, based on con-

ventional competition policy standards none would be likely to raise serious concerns in the assumed relevant market that includes 205 MHz of spectrum. Each of these acquisitions would exceed the nominal HHI thresholds in the Merger Guidelines, but, as noted above, acquisitions that result in HHIs below 2,000 are seldom challenged.

b. Hypothetical 2

Now suppose that prior to a potential acquisition the 205 MHz of spectrum in a relevant market were divided among firms in the manner shown in Table 2. Two firms have 45 MHz each, two have 35 MHz each, one has 25 MHz, and 20 MHz is divided among a large number of other firms. In this market, the pre-acquisition HHI is 1,695.

Suppose next that Firm A, which initially has 45 MHz of spectrum, proposes to acquire a 10 MHz license from Firm D, which initially has 35 MHz of spectrum. Firm A's market share would then increase to 55 MHz (26.8 percent) and the HHI would increase by 95 to 1,791. This acquisition, which would be prohibited by the spectrum cap, would not exceed even the nominal Merger Guidelines' standards.

3. Conclusion

It is clear from the preceding discussion and illustrative examples that there is virtually no relationship between the Commission's spectrum cap and the Merger Guidelines standards or competition policy enforcement practices. Given a relevant market consisting of 180 MHz, 205 MHz, or more of spectrum, the Commission's 45 MHz spectrum cap would block numerous types of acquisitions that would not approach the market share and HHI thresholds used to determine which transactions require further scrutiny.

Furthermore, any spectrum cap ignores all features of the market other than the applicant's post-transfer share of spectrum. For example, a spectrum cap ignores the distribution of remaining spectrum among other entities, and hence ignores most of the determinants of the HHI or concentration in the market. This point alone should be sufficient to lead to a conclusion that a spectrum cap is not a reasonable method of dealing with concerns about market power.

An alternative rule that would set a cap on the allowable HHI rather than shares of individual firms in a market would have many of the same deficiencies as the existing spectrum cap. The following sections of this paper will explain why a case-by-case approach to evaluation of the competitive effects of proposed license transfers will lead to a more efficient assignment of spectrum than would result from any simple rule based on market shares or concentration.

IV. Costs Imposed by a Spectrum Cap

The preceding section of this paper makes the point that the spectrum cap prevents a variety of transactions that do not raise significant market power concerns in a relevant market for spectrum. The present section makes the further point that many of the prohibited transactions would be in the public interest because they would lead to lower costs, greater innovation, more competition, and hence lower prices, higher quality, and greater choice for consumers. A spectrum cap interferes with the ability of companies to respond to market incentives for efficient allocation of resources. The result of the cap therefore is to prevent transactions that would be in the public interest because they would benefit consumers without significantly increasing the likelihood of market power. The cap also prevents other transactions that would be in the public interest because, on balance, their procompetitive effects would outweigh any increased likelihood of market power.

There are two ways in which a cap interferes with efficient use of scarce resources in situations in which market power is not a valid concern. First, and most important, a cap prevents acquisitions that may result in substantial efficiency gains without increasing market power. Second, a cap is likely to induce companies to distort their business arrangements so that they do not cross the thresholds for attributable interests or having licenses in the same geographic area, even when more efficient business arrangements would not create market power.

A. Acquisitions that Would Give an Entity an Attributable Interest in More Than 45 MHz of Spectrum May Result in Substantial Efficiency Gains

Resource allocation may be more efficient for several reasons if an entity is allowed to have an attributable interest in more than 45 MHz of spectrum. These reasons are discussed below.

At the outset, however, it is important for the Commission to reconsider one of the justifications it has offered for the spectrum cap. In effect, the Commission has suggested that the cap is useful to prevent one company from becoming larger and more efficient than the others in a market. In 1994, the Commission stated that one purpose of the cap was to "help promote competitive parity." (Third Report and Order, Aug. 9, 1994, para. 252.) In 1996, the Commission made the following statement:

The 45 MHz spectrum cap is also needed specifically to prevent cellular licensees from gaining too great a competitive advantage over new entrants to the wireless telephony market. Cellular companies already hold licenses for 25 MHz of clear spectrum, and they already have technical expertise, customer bases, marketing operations, and antenna and transmitter sites. In short, cellular operators have a competitive position that is superior to that of any new market entrant....[T]he 45 MHz cap will help to level the playing field for all new entrants, while ensuring that

incumbent providers are not placed at any disadvantage. (Report and Order, June 21, 1996, para. 101.)

As a general matter, consumers are not made worse off when one firm is larger or more efficient than others. Indeed, the reverse often is true. Firms with lower costs tend to charge lower prices. The Supreme Court has made it clear that the purpose of the antitrust laws is to protect competition, not competitors. Competition policy seeks a level playing field, not equal-sized players. It follows that the Commission should not consider equalizing the market shares of companies as a rationale for the spectrum cap.

1. The Cap Sacrifices Economies of Scale and Scope

There may be significant economies of scale and scope that would not be realized by a company that is limited to 45 MHz. As a result, a single company with attributable interests in more than 45 MHz of spectrum may be more efficient than two companies with smaller amounts of spectrum.

While some economies of scale and scope can be realized by a company operating in a number of geographic areas, the existence of economies of scale that relate to a single geographic area was the reason that the Commission licensed only two cellular carriers, given the amount of spectrum allocated to cellular service, as well as the reason that the Commission allocated 30 MHz of spectrum for each of three PCS licenses. An issue in this proceeding is what evidence exists to support the view that 45 MHz is sufficient to exhaust economies of scale as well as scope.

Economies of scope may arise on both the supply side and the demand side. As an illustration, supply side economies of scope would exist if a single firm producing both wireless telephony services and wireless data services would have lower costs than separate firms producing these two services, even if the services were sold to entirely different consumers. Demand side economies of

scope would exist if consumers place a higher value on wireless telephony services and wireless data services that are offered by a single supplier than they place on telephony and data services offered by separate suppliers. Both types of economies of scope appear to be important in the case of wireless telecommunications.

Examples of sources of economies of scale and scope on the supply side are economies arising from common use of local facilities (for example, towers, switches, fiber networks), various corporate functions (for example, customer service), brand name assets, relations with specific customers, advertising, and wholesale and retail distribution. Evidence of economies of scope on the demand side is provided by the interest of some firms in selling, and of some consumers in buying, integrated bundles of wireless telecommunications services, sometimes making use of the same handsets.

Consider also a company that is using 45 MHz of spectrum in some geographic areas and 25 or 30 MHz elsewhere. Suppose this company is interested in providing a new service that would require an additional 10 MHz of spectrum in any area in which it would be offered. Given the 45 MHz cap, the company could provide this new service only in certain geographic areas. However, two recent empirical studies based on PCS auction data concluded that there are significant synergies that make a set of licenses in different geographic areas more valuable if they are under common ownership.¹¹ One can infer from this finding that efficient use of broadband spectrum requires regional and national services, which, of course, are what one sees developing in the market. In this

¹¹ Patrick S. Moreton and Pablo T. Spiller, "What's in the Air: Interlicense Synergies in the Federal Communications Commission's Broadband Personal Communication Service Spectrum Actions," *Journal of Law and Economics*, October 1998, pp. 677-716; L. M. Ausubel, P. Cramton, R. P. McAfee, and J. McMillan, "Synergies in Wireless Telephony: Evidence from the Broadband PCS Auctions," *Journal of Economics and Management Strategy*, 1997, pp. 497-527.

situation, the inability of a company to obtain additional spectrum in some geographic areas (where it is already using 45 MHz) would be an impediment to its offering additional service even in geographic areas in which it has 30 MHz of spectrum or less. In short, the 45 MHz cap may cause efficiency losses even in geographic areas in which companies would be permitted to acquire additional spectrum.

It should not be assumed that exploitation of economies of scale and scope will result in a reduction in the number of companies offering various telecommunications services. Failure to permit exploitation of economies of scale and scope may result in foreclosure of competitors in addition to higher costs. The Commission itself has recognized the possibility that "a cap may affect the ability of a CMRS provider to attain certain economies of scale and scope" and that "the existing spectrum cap may impede delivery of potentially lower-cost service to rural customers as economies of scope go unrealized." (Notice of Proposed Rulemaking, November 19, 1998, para. 46.) Also, the higher costs and capacity constraints for wireless services that may result from a spectrum cap reduce the ability and incentive of companies to offer wireless telecommunications services that compete with wireline services.

2. The Cap Causes Inefficient Use of Substitutes for Cellular, Broadband PCS and SMR Spectrum

A company that is limited to 45 MHz of cellular, broadband PCS and SMR spectrum may be induced to substitute use of other, higher cost inputs for this type of spectrum. Rather than using the combination of this type of spectrum and other resources that would minimize the opportunity costs of its activities, a company that is prevented from obtaining more than 45 MHz of this type of spectrum may distort its use of inputs in several ways:

- A company may substitute types of spectrum that are not subject to the cap for cellular, broadband PCS and SMR spectrum, even though use of some of the other types of spectrum by this company may have higher opportunity costs. Other spectrum may have a higher opportunity cost because it is more valuable for other uses or requires greater relocation of incumbent users. Also, use of other, non-adjacent spectrum may result in higher equipment costs, such as more expensive handsets. These cost considerations were among the principal reasons that the Commission decided to allocate contiguous spectrum to broadband PCS rather than allocating spectrum in two separate MHz ranges, one of which was already being used for microwave transmission. (Memorandum Opinion and Order, GEN Docket No. 90-314, June 9, 1994, para. 10-11.)
- A company may substitute capital for spectrum, even though the cost of the capital is greater than the value of the released spectrum. A company can substitute capital for spectrum, up to a point, by adding base stations, dividing its service area into smaller cells, and operating at lower power so that it can reuse frequencies to a greater extent without increasing interference. Because the capital cost per unit of spectrum saved increases as one moves farther from the efficient input ratio, however, there is a limit to the extent to which firms will economize on spectrum in this way.

The fact that spectrum is but one input into the production of CMRS services raises a number of analytical issues. As we have just noted, to the extent that capital can be substituted for spectrum in producing a given level of wireless services, a spectrum cap will cause suppliers to substitute capital for spectrum, or increase capital intensity, up to a point. Suppliers will respond to the spectrum cap in this way even though the opportunity cost of the additional capital used is greater than the value of the spectrum saved, and thus the increase in capital intensity increases the cost of producing wireless services. The idea that

regulatory policy can lead to inefficiently high capital intensity in production of communications services is nothing new: the Commission abandoned traditional rate of return regulation in favor of rate caps for monopoly telephone companies in part because rate of return regulation encourages inefficient substitution of capital for other inputs.¹²

3. The Cap Prevents Efficient Companies from Expanding

Some companies are more efficient than others. They have lower costs and offer services that cater better to consumers' preferences. For example, they may offer innovative services and integrated bundles of services, attractive pricing plans, and responsive customer service. Consumers benefit from allowing these more efficient companies to acquire assets that would otherwise be used by less efficient companies. In addition to limiting transfers of assets from inefficient to efficient firms, spectrum caps reduce the incentives for firms to be efficient, because they reduce both the rewards for being efficient and the penalties for being inefficient. In short, caps discourage procompetitive behavior.

The Commission has stated that it disagrees with the argument "that we are reserving space for inefficient providers. A spectrum cap will not limit the market share that can be obtained by any single firm. Market forces will determine the market share of each firm with the more efficient firms acquiring higher market shares." (Third Report and Order, August 9, 1994, paragraph 249.) In fact, the spectrum cap can be expected to raise the costs and inhibit the expansion of a firm that has close to 45 MHz of spectrum, except in the unlikely circumstance that there is infinite elasticity of substitution between spectrum and other factors.

¹² When a company's permissible profits are proportional to the amount of capital it uses, the company naturally has an incentive to replace labor with capital even when the additional capital used costs more than the amount saved on labor costs.

4. The Cap Prevents Use of Unused Spectrum

In some cases, a company that already has 45 MHz of spectrum may be able to use additional spectrum that would otherwise remain unutilized to reduce its costs and increase its output. Much spectrum in low-density areas of the country appears unlikely to be used for at least a substantial period of time, given the Commission's spectrum cap. The Commission has recognized that some "rural areas...may not be economically served by PCS." (Memorandum and Order, June 9, 1994, para. 94.) The explanation for this is that in some low density areas there is not enough demand to warrant investments by a third, fourth, or fifth company offering mobile telephone service. The Commission has also recognized that "it may be difficult for these areas to profitably support a large number of independent facilities-based competitors." (Notice of Proposed Rulemaking, November 19, 1998, para. 57.) In such cases, at least for a period of time, allowing a company to use more than 45 MHz of spectrum may permit it to offer service more cheaply, to offer more service, and to offer additional types of services—all of which are procompetitive—without reducing other options available to consumers.

One might respond to the preceding point by arguing that competition at some point in the future may be greater if spectrum is reserved for new competitors that may enter if demand increases. This argument does not provide a rationale for preventing incumbents from leasing spectrum that would otherwise be unused, however. Even ignoring the potential for limited-term leases, one should balance the near-term opportunity costs of maintaining unutilized spectrum against the present discounted value of potential future benefits of having additional spectrum available for new entrants.

5. The Cap Diminishes Incentives to Reduce Prices, Increase Quality, and Innovate

For firms that are using 45 MHz or close to 45 MHz of capped spectrum in a geographic area, the spectrum cap reduces incentives to take a wide range of procompetitive steps that would otherwise lead to increased sales. Such steps include reducing prices, increasing quality, and developing innovative services. Firms reap the benefits of procompetitive activities largely by making additional profitable sales. A limit on a firm's ability to acquire additional spectrum lessens its ability to make additional sales.

Innovation has dramatically increased the benefits of wireless communications services to consumers, and any regulation that reduces incentives to innovate imposes substantial costs on consumers. The adverse effect of a spectrum cap on innovation seems likely to be particularly significant for a firm that is using 45 MHz of spectrum in a number of geographic markets. The explanation is that incentives for making the risky investments that underlie innovations may depend on having the ability to reap the rewards of the innovation in a large number of markets, or by being able to offer the service on a regional or national basis.

The Commission has responded to such arguments by stating that the "spectrum cap does not diminish the incentives to develop innovations that use spectrum more efficiently. Indeed, an innovation that increases spectrum efficiency will allow a firm to raise its share of traffic without having to increase its share of the spectrum utilized to carry that traffic." (Third Report and Order, August 9, 1994, paragraph 249.)

The Commission's argument does not address the effect of the cap on incentives to innovate in ways that do not economize on spectrum, for example, incentives to develop a new type of service. Those incentives are reduced by the

cap. In addition, the Commission's argument does not address the effect of the cap in reducing incentives to innovate in ways that would economize on spectrum used to produce additional services beyond those produced with a company's initial 45 MHz of spectrum. For example, the cap would reduce the incentives of a company with 45 MHz of cellular and PCS licenses to innovate in ways that would economize on SMR spectrum. Given the important role of innovation in the wireless industry, the effect of the cap in reducing these incentives to innovate is likely to cause substantial harm to consumers.

Furthermore, while the spectrum cap is likely to encourage innovations and other investments aimed at economizing on spectrum, the additional incentives that the cap provides are artificial. These artificial incentives would lead to inefficient innovations and investments. The incentive to innovate should be based on the true opportunity cost of spectrum. In principle, there are several approaches to economizing on spectrum, including reducing spectrum per call, reducing the size of cells, and increasing the share of cells that use a particular frequency. There are various ways to pursue each of these approaches through increased R&D expenditures and then capital investments. However, steps that economize on spectrum at a cost in terms of R&D expenditures and capital that exceeds the value of the spectrum saved are not worthwhile from society's point of view. A spectrum cap artificially induces firms to take such steps and therefore distorts resource allocation rather than promoting the types of innovation that are in the public interest.

6. The Cap is Likely to Induce Companies to Distort Their Business Arrangements

A spectrum cap is likely to induce companies to distort their business arrangements so that the companies do not cross the thresholds for having attributable interests or having licenses in the same geographic area, even when more efficient arrangements would not create market power. A rule that says "firms

cannot do (i) if they do (ii)” will tend to reduce the extent to which firms do both (i) and (ii). A rule that says “firms cannot (i) acquire an interest in more than 45 MHz of licenses if (ii) the interests they acquire pass the thresholds for attributable interests” can be expected to cause firms to acquire not only interests in fewer licenses but also to structure their interests so they are not attributable.

It follows from this that one of the effects of the spectrum cap is likely to be that firms that have 45 MHz or close to 45 MHz of attributable interests may enter into less efficient business arrangements in connection with some licenses in order to avoid having attributable interests. For example, such firms might reduce the percentage of ownership they would acquire below 20 percent and reduce their participation in the activities of licensees with which they have various types of contracts. The result may be to increase the costs of the latter licensees by limiting their access to the most efficient management expertise and financing, and hence to reduce competition. If the cap applied only where there was a market power problem, this result might not be undesirable, because a reduction in participation might reduce market power. However, the spectrum cap limits what firms can do in many situations in which market power would not be a problem in a relevant market for spectrum. As a result, the cap may prevent efficient ownership and contractual arrangements in many situations.

V. Case-by-Case Evaluation Based on Merger Guidelines Principles

The preceding sections of this paper have explained that a spectrum cap of any kind is an inefficient constraint on competitive market activity. A cap will prevent some mergers, acquisitions, joint ventures, and financing and other contractual arrangements that would not increase market power but that would reduce costs and prices, increase service quality, increase choices for consumers, and encourage innovation.

Case-by-case evaluation of the competitive effects of proposed spectrum license transfers based on the principles articulated in the Merger Guidelines, rather than reliance on a spectrum cap or other ownership rules, would advance the Commission's goal of promoting competition and economically efficient use of the spectrum. Case-by-case evaluations are relied upon to assess the market power implications of merger and acquisition proposals in the vast majority of industries because of the deficiencies of rules. Case-by-case evaluations would permit full consideration of whether a transaction would be likely to lead to competitive problems such as underutilization of spectrum, exclusion of competitors, lower output or quality of communications services, and higher prices.

Generally, acquisitions that would increase concentration of ownership or control over spectrum raise the same economic issues as mergers and acquisitions in other industries, and they can be analyzed appropriately using the tools that have been developed to apply Section 7 of the Clayton Act. These tools, which are described in the Merger Guidelines, will of course be applied by the antitrust authorities in cases that fall into their jurisdictions and can be applied by the Commission in its license transfer process.

The Merger Guidelines provide an analytical road map. Use of the Guidelines does not compel the Commission to duplicate the work of the antitrust agencies or to adopt the substantive standards used by those agencies. Use of the Guidelines is consistent with the fact that the Commission's statutory mandate includes but is not limited to the objectives of the Sherman and Clayton Acts.

A. Case-by-Case Evaluation Would Permit Transactions that Would Not Be Likely to Increase Market Power Even Though They Would Raise HHIs above Merger Guidelines Thresholds

Section III of this paper explained that use of the 45 MHz spectrum cap is not consistent with sound competition policy because it prevents transactions that

would result in market shares and market concentration well below the levels at which market power is generally a concern. One should not drawn from that argument a conclusion that the Commission should replace the 45 MHz spectrum cap with a cap that permits a higher number of MHz or by a rule that imposes limits on HHIs. Any such rule that would prevent a large share of potentially anticompetitive transactions would also prevent a large number of transactions that would increase efficiency without raising market power problems.

On this point, it is important to keep in mind that the HHI thresholds in the Merger Guidelines are not treated by the antitrust agencies or courts as maximum limits on the extent of concentration permitted by the antitrust laws. At most, the thresholds create presumptions that are evaluated based on the facts in particular cases. Based on such evaluations, the antitrust agencies often conclude that an acquisition would not create or enhance market power even though it would result in HHI figures that exceed the thresholds in the Merger Guidelines. On this point, the Merger Guidelines (Section 2.0) state:

However, market share and concentration data provide only the starting point for analyzing the competitive impact of a merger. Before determining whether to challenge a merger, the Agency also will assess the other market factors that pertain to competitive effects, as well as entry, efficiencies and failure.

An evaluation of the "other market factors that pertain to competitive effects" that are referenced in the preceding quotation would include consideration of a number of factors that affect competition but that are neglected by HHI calculations. One such factor is the ability of firms in a market to expand output in response to a price increase brought about by an output reduction by one or more other firms. Holding other things (including the level of the HHI) constant, if the firms in a market have a higher elasticity of supply, the likelihood of market power is less. Elasticity of supply for a wireless services firm may be

high up to a certain output level because wireless firms tend to have high fixed costs of providing a network, together with variable costs that are low relative to market prices. When variable costs are substantially below market prices, the costs of restricting output are high and the incentives to expand output are great. Also, up to a point opportunities to economize on spectrum enable firms to expand output. Elasticities of supply, which may vary from market to market, must be considered in addition to HHIs in evaluating an acquisition.

B. Case-by-Case Evaluation Permits Balancing of Effects on Market Power and Efficiencies

There are advantages of the case-by-case approach over a rule in addition to the fact that the case-by-case approach would permit transactions that would not be likely to increase market power. There are likely to be some transactions that would increase the likelihood of market power somewhat but that nevertheless would be in the public interest. For illustrative purposes, suppose that a merger would increase market power by a small amount, and that as a result prices would be likely to increase by 1 percent *relative to costs*. However, suppose that at the same time the merger would permit a 4 percent reduction in variable costs. In that case, the likely net effect of the merger would be to reduce prices by 3 percent. Clearly, a merger that would reduce costs by 4 percent and prices by 3 percent would be in the public interest. Case-by-case evaluation would permit this type of trade off.

C. Case-by-Case Evaluation Would Permit Consideration of Facts That Vary Among Markets or Over Time

Rules are inherently rigid. Competitive conditions vary among markets and over time, and evaluation of competition therefore must be flexible. This is particularly true in the case of wireless communications, where the alternatives to wireless services and other factors vary among markets and where technol-

ogy and regulation are changing rapidly. Ways of economizing on spectrum are expected to increase, and more spectrum may be allocated to wireless services. As a result, similar market share and HHI figures may have significantly different implications in different markets or at different times.

D. Case-by-Case Evaluation Permits Consideration of Matters That Are Not Clear Cut

A major premise of any simple spectrum cap or alternative rule is that delineation of relevant markets and the relationship among market shares, HHIs, ownership percentages, non-equity interests, and geographic service overlaps, on the one hand, and market power, on the other, are clear cut. In fact, each of these things requires evaluation based on the specific facts of a case as well as judgment. How one interprets a particular HHI depends, for example, on how strong the evidence is for a particular market definition, on the ability of competitors to expand output, on the existence of substitutes outside the delineated market, on ambiguities about how market shares should be computed, on potential efficiencies, and on other considerations.

Case-by-case evaluation is also likely to permit the Commission to identify remedies for competitive concerns other than disapproval of a license transfer. For example, based on the facts of a specific case, the Commission may be able to determine that competitive concerns would be alleviated by a contractual change that would have a bearing on attributable interests.

E. The Cap Has Not Promoted Competition

None of the evidence cited in the NOPR supports the conclusion that "the existing aggregation limit to date may have promoted competition in mobile voice markets." (Notice of Proposed Rulemaking, November 19, 1998, para. 35.) Any transaction that would have been likely to reduce competition would have

been detected by the Commission and antitrust authorities relying on the principles and tools in the Merger Guidelines.

The Commission expresses concern that the Clayton Act may not enable anti-trust agencies to prevent or condition a merger or acquisition that "threatens to impede the development of competition where such competition does not yet exist or is in its infancy." (Notice of Proposed Rulemaking, November 19, 1998, para. 78.) This concern is misplaced. The whole point of the 1950 Celler-Kefauver Amendment to Section 7 of the Clayton Act, as the Supreme Court has noted (*United States v. Vons Grocery*, 370 U.S. 294, 315 (1966)), is to stop incipient concentrations that may lead to further concentration and reductions in competition. The substantive standards embodied in the Merger Guidelines are intended to implement that policy.

F. Conclusions

The spectrum cap should be repealed. Any review of license transfers under the Communications Act should be carried out on a case-by-case basis, based on the principles articulated in the Merger Guidelines. The case-by-case approach would permit license transfers that do not raise competitive concerns even if they would violate a 45 MHz cap. Also, the case-by-case approach would allow the balancing of efficiency-enhancing effects against potential increases in market power. Based on extensive experience from thousands of investigations in hundreds of industries, the federal antitrust agencies have concluded that as a general matter there is no substitute for case-by-case evaluation because simple rules would lead to inefficient resource allocation. Wireless communications is no exception.

VI. Other Rationales for the Spectrum Cap

The Commission has supported the spectrum cap with arguments that the cap reduces uncertainty and administrative costs. The public interest is not served

by a rule that reduces uncertainty by banning large categories of efficient transactions, however. Similarly, reductions in the Commission's administrative costs do not justify the inefficiency of spectrum use that is likely to result from the cap.

The Commission has argued that "A cap is a bright line test that provides entities who are making acquisitions with greater assurance than a case-by-case approach that if they fall under the cap, the Commission will approve the acquisition." (Third Report and Order, Aug. 9, 1994, para. 250.) However, this is not an argument for a cap but rather for a safe harbor, which may indeed be in the public interest. The Commission could adopt a safe harbor policy that it would not challenge acquisitions that would give an entity an attributable interest in 45 MHz or less, while dealing with transactions that would give an entity more than 45 MHz on a case-by-case basis.

VII. Conclusions

This paper has three principal findings. First, the spectrum cap prevents many types of spectrum license transfers that would be unlikely to have an adverse effect on competition in markets in which shares are based on MHz of spectrum. Second, a spectrum cap distorts resource allocation and harms consumers by reducing achievement of economies of scale and scope, expansion of efficient firms, innovation and competition. Third, the Commission can attain its important goal of protecting consumers from market power without the distortionary effects of a cap by relying on case-by-case evaluation of license transfers using the tested competition policy principles and tools that are set out in the Merger Guidelines.

Based on the foregoing considerations, this paper concludes that the Commission's spectrum cap is unnecessary and should be repealed.

Table 1

Hypothetical 1

Firm	MHz	Share (%)	Squared Share
A	40	19.5	381
B	30	14.6	214
C	30	14.6	214
D	30	14.6	214
E	25	12.2	149
F	15	7.3	54
G	10	4.9	24
H	5	2.4	6
Many small	20	9.8	0
Total	205	100.0	
Pre-acquisition HHI			1255
Increase in HHI if A acquires G (but not F)			190
Post-acquisition HHI if A acquires G			1446
Increase in HHI if A acquires F (but not G)			286
Post-acquisition HHI if A acquires F			1541
Increase in HHI if (A+F) acquires G			262
Post-acquisition HHI if (A+F) acquires G			1802

Table 2

Hypothetical 2

Firm	MHz	Share (%)	Squared Share
A	45	22.0	482
B	45	22.0	482
C	35	17.1	291
D	35	17.1	291
E	25	12.2	149
Many small	20	9.8	0
Total	205	100.0	
Pre-acquisition HHI			1695
Effect of A acquiring 10 MHz from C:			
Increase in HHI			95
Post-acquisition HHI			1791